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Vectors: Which Way Is Which?

1, 40 minute class period

Goals:

- Exposure to vectors
- Understand that values can direction in addition to magnitude

Objectives

- Draw vectors
- Add and subtract vectors

Materials

- cm grid paper
- colored pencils
- Handout

Prior Knowledge:

- Add integers
- Graph in 2 dimensions

NJCCCS:

4.3.7.D.1; 4.2.7.C.2;

Procedure:

1. Instructor begins discussion about *vectors* and *scalars*
2. Show how vectors represent direction and magnitude and why using vectors are more useful than just scalars in these cases
3. Demonstrate how to draw a vector by graphing the components
4. Let the students explore combining 2 drawn vectors
5. Explain how to add 2 vectors
6. Distribute handouts and the students complete the worksheet in small groups of 2-3 based on proximity (10 min)
7. Summary and review of the worksheet and discussion of the significance of vectors to math and science research

Handout:

1. Draw the following vectors:

a. $\langle 0, 3 \rangle$

b. $\langle -1, 5 \rangle$

c. $\langle 2, 0 \rangle$

d. $\langle 3, 3 \rangle$

e. $\langle -4, 0 \rangle$

2. Draw the following vectors on the same graph and then add them. Draw the resulting vector in with a colored pencil.

a. $\langle 0, 2 \rangle; \langle 0, 4 \rangle$

b. $\langle -1, 3 \rangle; \langle 4, 6 \rangle$

c. $\langle 10, 4 \rangle; \langle -15, -7 \rangle$

d. $\langle 5, -2 \rangle; \langle -2, 0 \rangle$